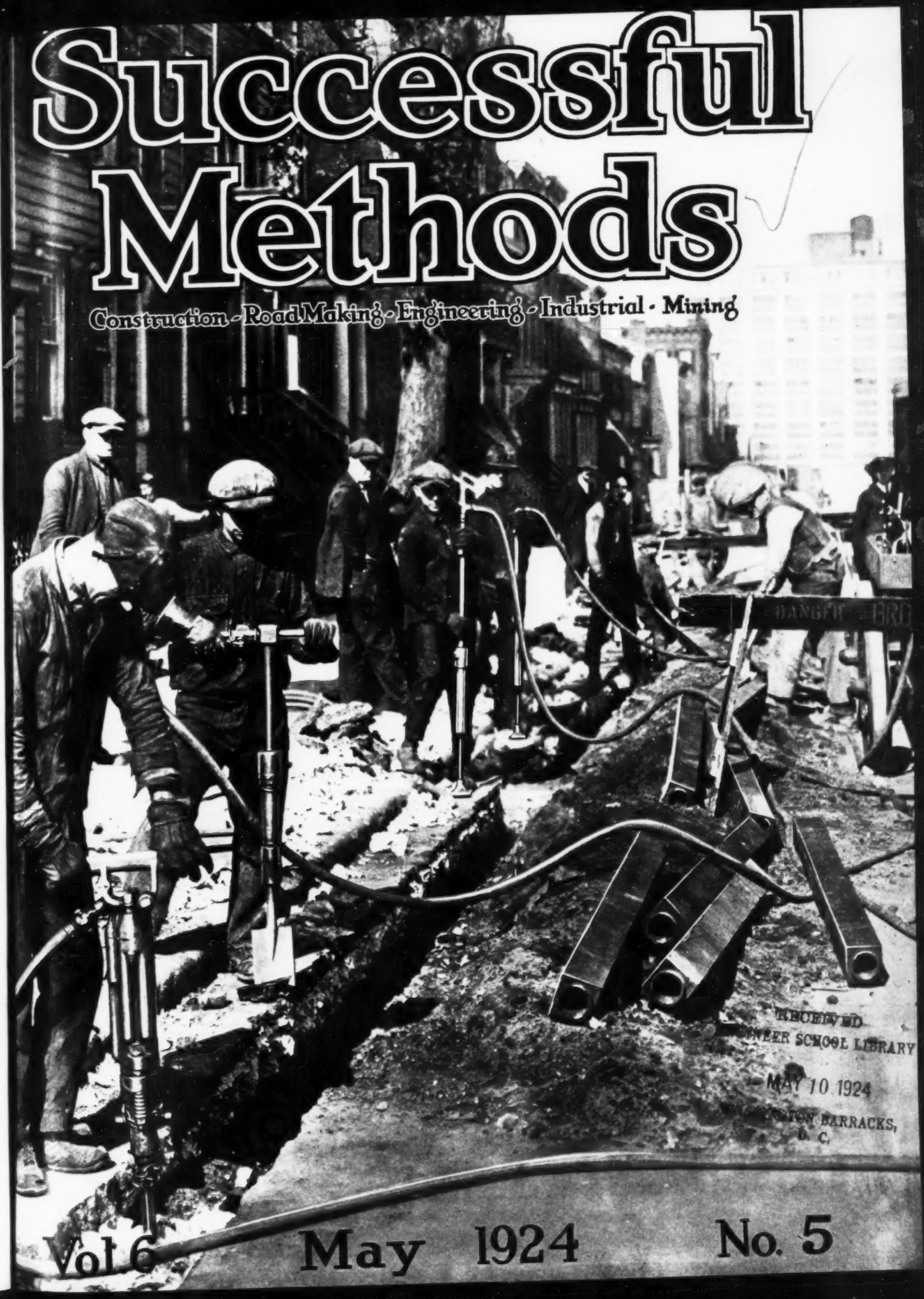
Successful Methods

Construction - Road Making - Engineering - Industrial - Mining



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Vol 6 May 1924 No. 5

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THE Western 45-yard automatic compression lock air dump car was designed especially for handling the waste accumulations of industrial plants and such bulky material as coal. The force of gravity does the work, than which nothing is cheaper. It is a convertible car. By removing the steel side and end extensions it becomes a standard 30-yard air dump car, the best car ever built for use in heavy steam shovel excavation.

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Earth and Stone Handling Equipment

AURORA, ILLINOIS.

Successful Methods

A Magazine of Construction Service

Published by SUCCESSFUL METHODS, Inc.
F. A. SMYTHE, President
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Vol. 6 MAY, 1924 No. 5

Immigration and the Labor Supply

RESTRICTION of immigration practically to the vanishing point will further affect the labor supply in this country. There will naturally be national variations in labor conditions with variations in general business. There will further be local variations due to other causes. No ability as a seer is needed, however, to see that unless this country adopts more and more labor-saving methods, the demand for labor will exceed the supply.

The answer is that the alert concerns, who think ahead more than a few weeks, will begin at once to plan to meet the situation. They will not wait until some new method comes into general use. They will get in on the ground floor with such new methods and new equipment as can be used to advantage in saving labor on their work.

Concerns that make the most of their opportunities have been doing just this for years. Now, with the certainty of a more or less regular shortage of labor, they will almost unconsciously give more thought to ways of making machines take the place of men. Their slower thinking and less successful competitors will wait to see whether the new methods will work.

The reduced efficiency and higher wage rates that go with a demand for labor close to or in excess of the supply make it possible to use machines in place of men for jobs that have always been considered hand labor work. Just as one example of this are the mechanical methods of digging and back-filling trenches for small pipes and service connections that are becoming common. Our front cover and one of the articles in this issue illustrate how far one great public utility has gone in this direction. Small trenching machines designed to do this class of work also are being sold in rapidly increasing numbers. Not only are the large public utilities adopting these means of eliminating labor, but even small contractors find it to their advantage to follow the same policy of cutting out men.

There are so many other jobs on which machines can take the place of men to advantage that the situation created by the lack of labor can be met. All that is needed is the right slant in the minds of the management. That will be forced sooner or later by actual lack of labor, high wages and competition. It will be cheaper and easier to avoid the forcing process by adopting labor-saving methods and equipment wherever the chance occurs.

Shovel and Crane Capacity

"WHAT will it dig and load in 10 hours?" That question is always put to manufacturers of shovels and cranes by prospective users new to excavating and material-handling. Many experienced men also raise the same point. The wise reply is, "That depends."

And it does depend on many things which the manufacturer cannot build into his machine. Among these are the ability of the operator and the way the job is managed. The most common weakness of management is the failure to arrange so the shovel or crane never has to wait for cars, trucks or wagons. In other words, many managers of excavating and handling jobs do not realize that it pays to have more than merely just enough haulage equipment to keep the shovel busy when everything goes right.

The best haulage equipment that can be provided is liable to unavoidable delays between the loading unit and the delivery point. The longer the haul, the greater the chance for delay. Other things also are likely to upset the best schedule that can be made. Then the loading unit has to wait, unless there is at least a slight surplus of haulage equipment. This means a drop in output that reaches a big total per day, even when the delays each appear to be slight.

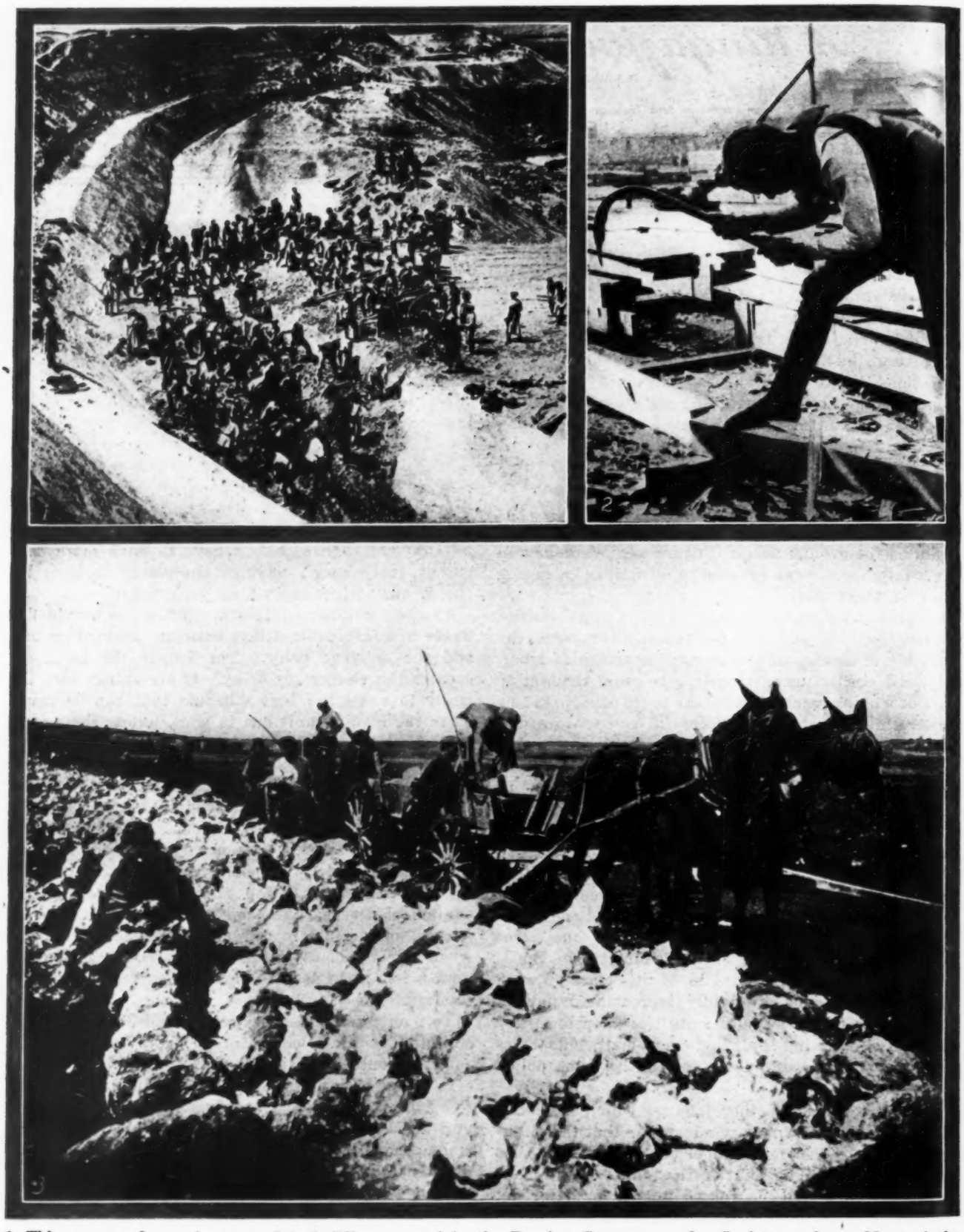
Offhand it might appear questionable to provide a slight excess of haulage equipment for any job. The truth of the matter is that on most jobs the running time for haulage equipment is generally too close to the practical limit. The slight excess of haulage equipment necessary to keep the loading unit running steadily only means more reasonable schedules. Then when a delay occurs the haulage units can be speeded up a bit so as to keep the loading unit going without interruption.

To men experienced in digging and handling materials this is all second nature. Equipment men, who come in contact constantly with all varieties of concerns engaged in this kind of work, find, however, that few jobs are equipped and managed so the loading unit can be kept working steadily. This variation in management is one of the main reasons for the wide difference in the output of the same size and make of loading units obtained by different users.

No Charge for Successful Methods

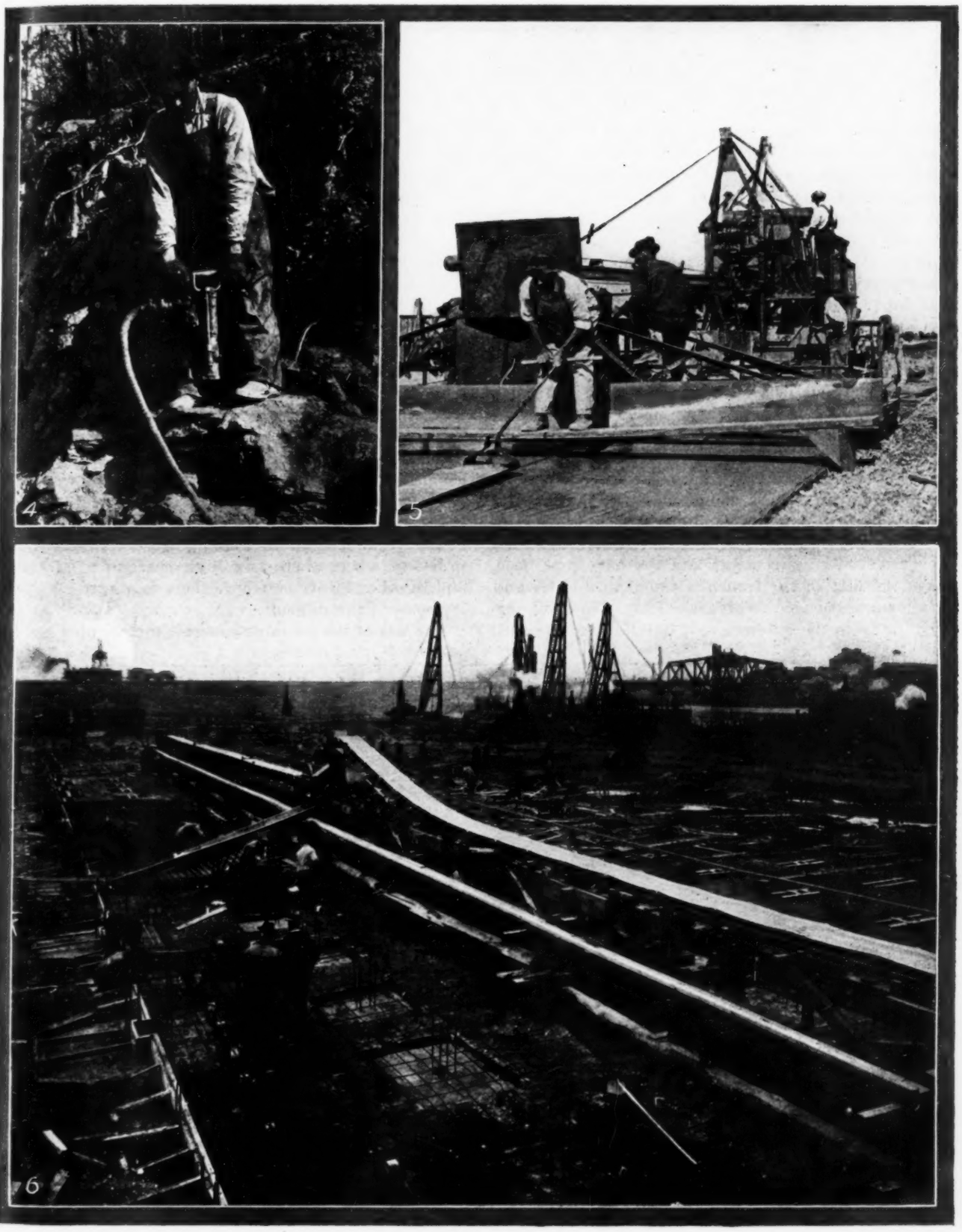
SUCCESSFUL METHODS is sent free of charge to men engaged in the construction industry.

Working with Their Hands



1. This swarm of men is engaged in building a canal in the Russian Caucasus, under Soviet auspices. Most of the mechanical equipment used on the Canal was destroyed in a revolutionary battle last October. © *Keystone.*
2. A Japanese carpenter who has confidence enough in his skill to put his foot in what looks like a precarious position. © *International.*
3. Road building in the Jewish section of Palestine. The materials are brought into the road in primitive wagons and dumped by hand. © *International.*

And with the Aid of Machines



4. Cutting through a ledge of rock with a pneumatic drill.
5. Modern paving methods. Mixer and finishing machine at work on a concrete road.
6. Handling concrete with a belt conveyor on a big factory job. This structure is being put up by the Western Electric Company at Kearny, New Jersey, and the concrete is carried the length of the building on these conveyors and distributed through short chutes. © *Gilliams.*

REDUCING COSTS WITH POWER EQUIPMENT

Brooklyn Edison Company Handles Its Street Work so far as Possible with Machines

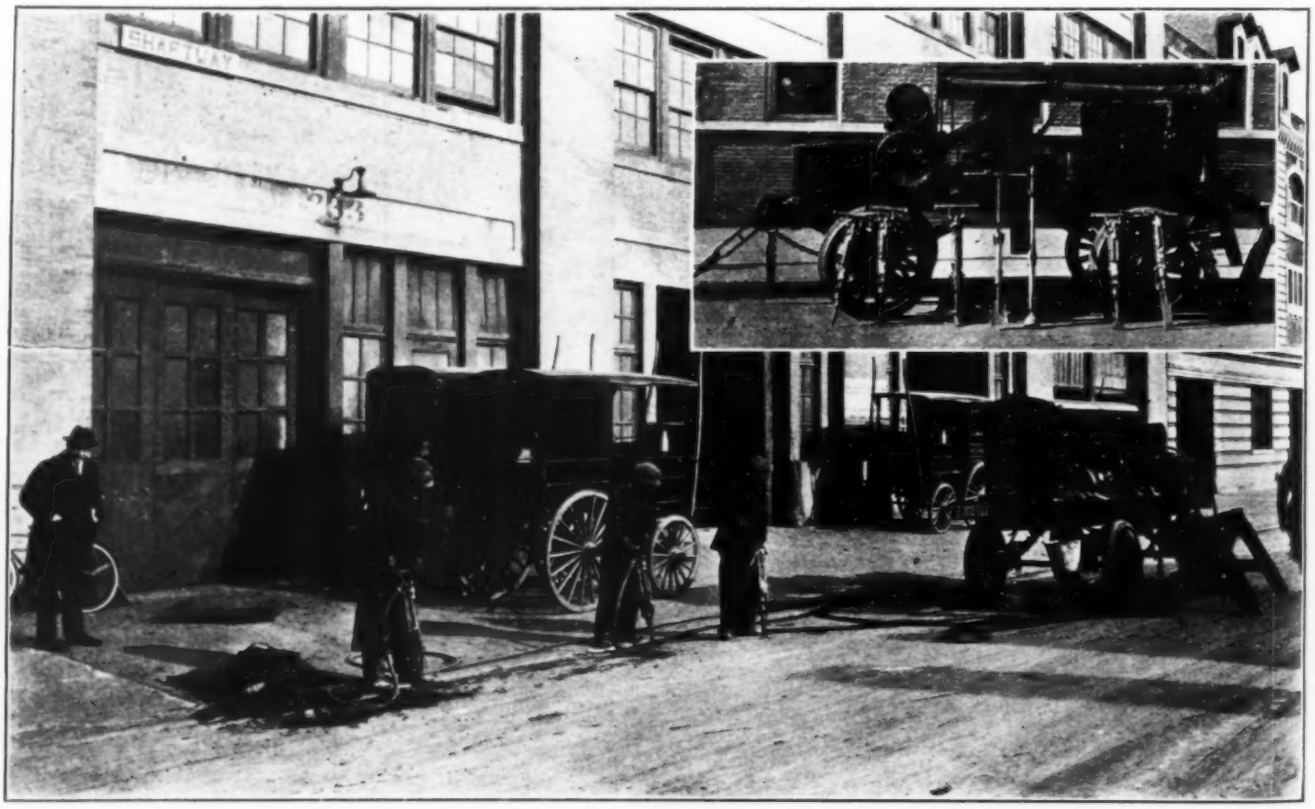
THE distribution of power and light by companies organized for that purpose carries with it a variety of construction problems. In the dense load areas of large cities the power and light systems are usually underground which require a large organization for all classes of underground construction. This organization is kept on the job throughout the year and must be ready to handle either new construction or repairs and service work. Due to its unusually rapid growth, the Brooklyn Edison Company has found it necessary to use power devices in preference to hand labor wherever possible, and in the last 5 years has equipped its Distribution Department with the machines which experience has proved best for the work involved.

At present the Distribution Department maintains 6 service units for work on its underground extensions and service installations. These units are equipped with a 2½-ton truck, a concrete mixer, an air compressor and a tool cart. The air compressor and concrete mixer are mounted on an automobile trailer. The personnel of each of these units consists of a foreman, two sub-foremen and twelve laborers. They remove the pavements and the pavement base, loosen the dirt in the trenches and tamp the backfill with compressed air machinery. They also drive service pipe from the basements of buildings to the curb lines on the street in about 80 per cent of the installations made.

Compressed air is used for a considerable portion of this work. Portable air compressors with a capacity in free air per minute of 128 and 160 cu. ft. are used and each compressor is equipped with a large assortment of air operated tools. Some of these tools were added to the manufacturer's equipment as a result of suggestions by the Brooklyn Edison Company. These tools consist of paving breakers in two sizes, rock drills, clay diggers, tampers and coal picks. It has been found that on small operations the 128-cu. ft. air compressors are sufficiently large, but during the last two years it has been found advantageous to use compressors of 160 cu. ft. capacity so that they can take care of both large and small jobs.

The use of compressed air in driving service pipes from the pavement to the curb has resulted in substantially lower costs. Two of the photographs accompanying this article show this class of work. It has many advantages, and not the least of them is the fact that the sidewalks are not disturbed. Of course, this method of driving service pipes is not practical where there is a high percentage of stone, and in other locations where there is a hard clay soil, it proves quite difficult.

The use of the portable concrete mixers also has re-



CUTTING PAVEMENT WITH AIR DRIVEN TOOLS. THE INSERT IN THE UPPER LEFT HAND CORNER SHOWS A PORTABLE COMPRESSOR WITH ITS OUTFIT OF TOOLS FOR VARIOUS PURPOSES

sulted in considerable saving. They average approximately from 3 to 4 cu. yd. per hour and due to the fact that they can be so easily transported from one place to another are able to give the maximum of service. On large types of jobs concrete mixers are usually kept on hand at all times.

Conveyors have been put to the rather unusual use of handling the material excavated from manholes. The large transformer manholes require the excavation of about 50 cu. yd. of earth, and conveyors have been found to be an economical means of loading the trucks which remove this material.

DRILLING THROUGH A CELLAR WALL TO ESTABLISH SERVICE CONNECTION

The photograph on the left on page 6 shows one of these conveyors in action loading a truck. In the interval when there is no truck on hand to be loaded the man at work in the manhole loosens the earth, and when the truck arrives it is all ready to be thrown into the receiving hopper of the conveyor and elevated out of the manhole and dropped into the truck.

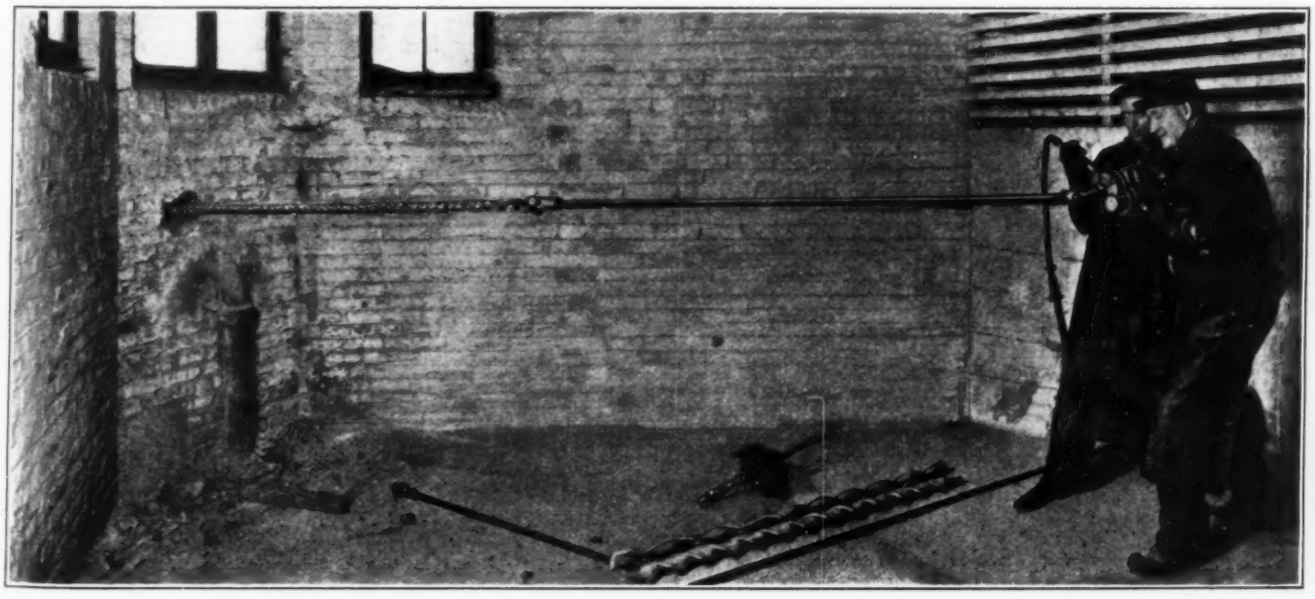
Mechanical excavators are now used by the Brooklyn Edison Company on trench work wherever the conditions are suitable for them. It has been found that these machines are much more efficient in trench digging than hand labor.

For heating sand and stone during the winter large kerosene torches are used and have been found to be more desirable than wood fires. It is easy to supply them with fuel, they give heat more quickly, and when the heat is discontinued no embers are left to blow around the street.

Difficulties have been solved in the work of installing duct lines by the use of adjustable trench braces. One of the photographs shows a typical trench with these braces in position. They are almost indispensable in the company's work and have eliminated considerable labor which used to be wasted in sawing, placing and setting the old type of lumber bracing.

It should be remembered that the work done by a company of this sort must be done in the most economical way. There is no question of making profit on service work. The job of the man in charge is simply to perform the service with as little cost as possible to the company and at the same time make sure the work is done efficiently. For that reason the experience of the Brooklyn Edison Company is often particularly valuable and shows clearly that by careful selection of mechanical equipment labor costs can be materially reduced.

The photograph on the cover of this issue of SUCCESSFUL METHODS shows one of the Brooklyn Edison Company's service units at work in a Brooklyn street. The various types of compressed air tools are in use and the job is typical of the work that is constantly



JUST ROOM FOR THE DRILL TO WORK

CONVEYOR USED FOR MANHOLE EXCAVATION

TYPICAL TRENCH SHOWING CONDUITS AND ADJUSTABLE BRACINGS

going on in various parts of Brooklyn in order to keep the Brooklyn Edison Company's service at the high standard which the company insists on maintaining. Only by the liberal use of labor-saving equipment, such as that described in this article, can this standard be constantly maintained.

FIELD DEMONSTRATION OF ROAD CONSTRUCTION AND MAINTENANCE

North Carolina and Road Builders Will Entertain All Interested in Highways

A FIELD demonstration of various methods of modern road construction and maintenance will be held in the vicinity of Winston-Salem, Greensboro and High Point, N. C., June 3, 4, 5, 6, 7, by the American Road Builders' Association.

This field demonstration will coincide with the visit to North Carolina of the Pan-American Highway Commission.

In cooperation with the American Road Builders' Association Frank Page, chairman of the North Carolina State Highway Commission, has selected a number of actual road jobs that are typical of various kinds of modern road construction. Included in these will be examples of all the modern types of improved highways from the natural surfaced road to the more highly developed pavements. Modern maintenance methods on different types of highways also will be demonstrated.

Work will be in progress in the regular way on all of the jobs that have been selected for the demonstration. At Greensboro there also will be a central demonstration of the machinery and equipment used in building and maintaining roads. All of the machinery and equipment at this central point will be in actual use, so that everyone can see just what sort of work they can do and how well they can do it.

The field demonstration, with the exhibit at Greensboro as a nucleus, and regular construction and maintenance work of every type in full swing at various accessible points, will furnish an unrivalled opportunity for the study of road building and maintenance methods. In other words, this will not be merely a display of machines and equipment but rather an opportunity to see how they work.

C. M. Upham, business manager of the American Road Builders' Association, will be in charge. Local highway officials throughout the southeastern States will particularly find this field demonstration of great value. They will be able to see in a few days a variety of road building and maintenance methods that ordinarily could be seen only by weeks of travel.

As the Pan-American Highway Commission will be in North Carolina until the night of June 10, other highway work in the vicinity of Charlotte and Asheville will be included in the field demonstration. There will further be an opportunity provided to visit various plants for producing sand, gravel and broken stone.

The cities of Winston-Salem, Greensboro and High Point have arranged a program of entertainment for those who attend.

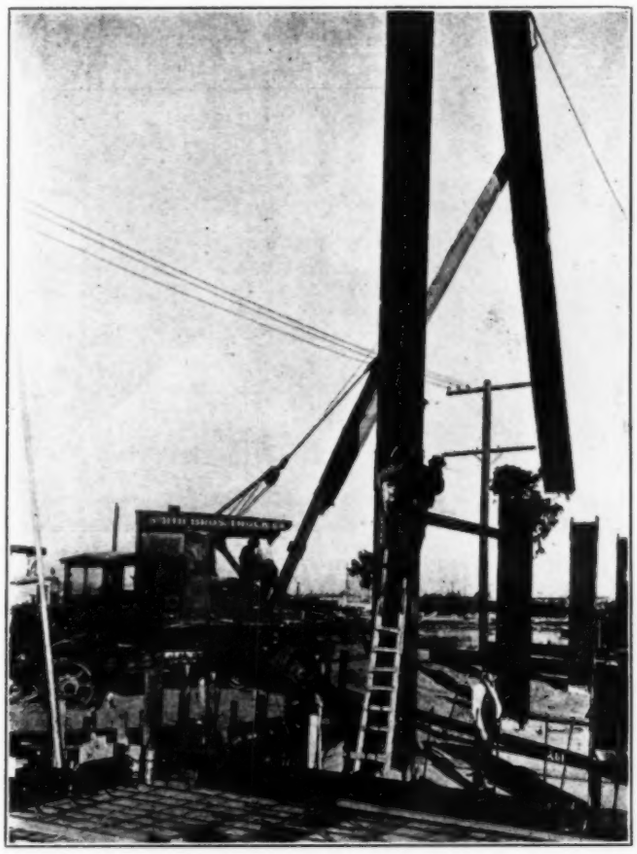
After three days in the vicinity of Greensboro, High Point and Winston-Salem, the Pan-American Highway Commission will be conducted across North Carolina, and will visit Salisbury, Charlotte and Asheville en route. Therefore, the North Carolina State Highway Commission is arranging to make further demonstrations en route. All who would like to inspect these additional demonstrations will be welcomed.

CRANES HANDLE HEAVY STEEL

Mobile Equipment Mounted on Motor Truck Lifts Columns and Girders Without Difficulty

THE handling of heavy steel is always one of the great problems in the construction business, and the photographs on this page show one solution of it. These two photographs were taken in different parts of the country, the upper one showing work in Los Angeles and the lower photograph showing the handling of heavy bridge girders in Detroit.

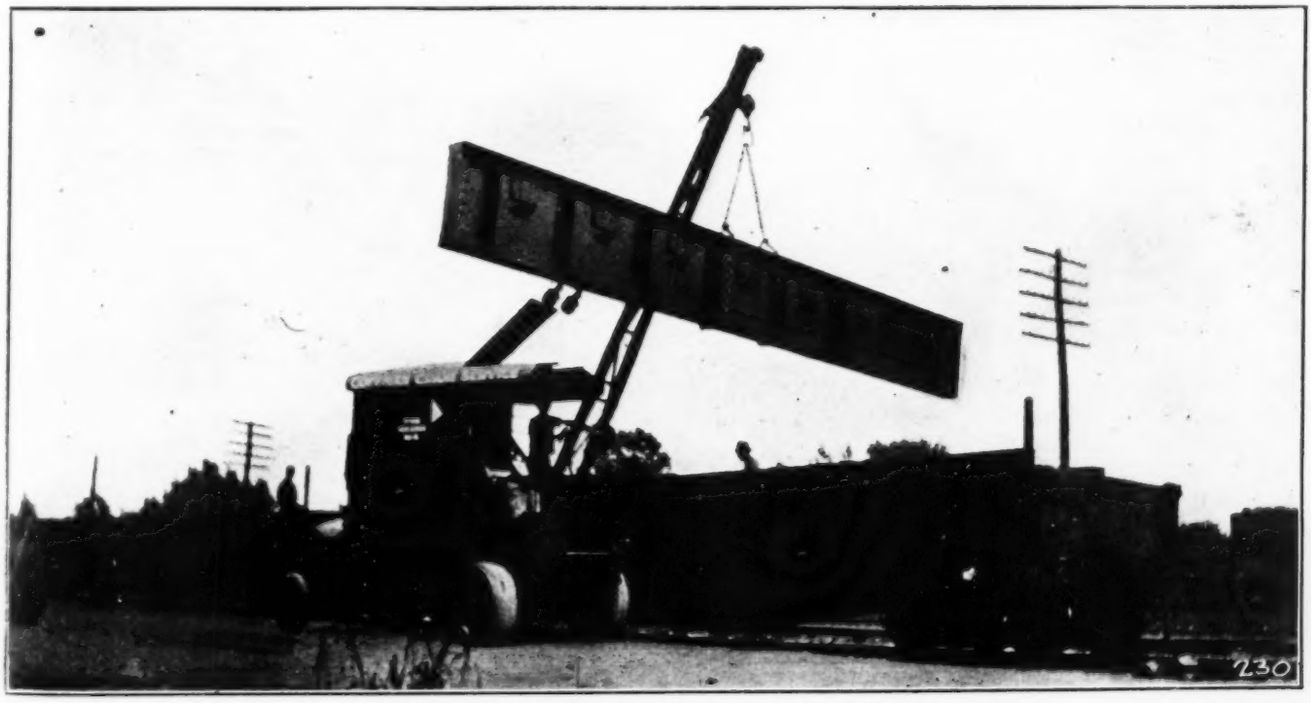
In both cases a crane mounted on a motor truck was utilized for this work. The Los Angeles crane, owned by Smith Brothers of that city, undertook the job of placing 40-ft. steel columns weighing 4000 lb. each. It took only 10 min. to pick up one of these big columns and hold it in place while the joint was being bolted. Then the crane was released, to move on to the next column. In order to handle these 40-ft. columns a timber boom extension was added to the boom of the crane.



PLACING 40 FT. STEEL COLUMNS

The Detroit job shows a similar crane, owned by the Coffman Crane Service, picking up heavy bridge girders from a flat car. This job was completed in 7 hr. at a profit of $140 to the owners of the crane.

Both of these jobs show the usefulness of mobile equipment. For example, in either case described the same crane could be used for unloading steel from flat cars and later on for erecting the same steel. This eliminates considerable worry at both ends of the route. The contractor can have his steel delivered at a point where there is no equipment for unloading and by using his own crane can handle it without difficulty.



CRANE MOUNTED ON TRUCK HANDLES BIG BRIDGE GIRDERS

RELOCATING HIGHWAY AT RIVER CROSSING

Typical Georgia Project Replaces Old Bridge and by New Alignment Straightens and Shortens Road

By Fred M. Garrett
of the Georgia Highway Department

A GOOD example of relocation and reconstruction of a river crossing is afforded by the Ogeechee River bridge project near Millen, in Jenkins County, Ga. This Federal Aid project is on State Route No. 23, also known as the Woodpecker Route, and is in charge of the State Highway Department of Georgia. The grading portion of the job was done by county forces and the creosoted timber bridges were constructed under contract.

THE MAIN BRIDGE, SHOWING CHARACTER OF SURFACING

The road is a popular one, and as shown in the diagram on the opposite page, the old alignment at the Ogeechee River was very poor. The road bed was ungraded and during flood stages was badly damaged. The heavy line in the diagram shows how the new project straightens out the road, and also shows the location of the two timber bridges which had to be built. The new project is 1.2 mile in length, and, as may be seen, saves considerable distance.

The road is a sand clay or top soil highway and is 26 ft. wide from shoulder to shoulder. The average height of the embankment above the swamp through which it runs is 6 ft., and in order to prevent the slopes from washing away they were sodded with Bermuda grass. Since the work was done the value of this sodding has been proved, as it has helped to save the embankment during heavy

MAIN BRIDGE BUILT OF CREOSOTED TIMBER

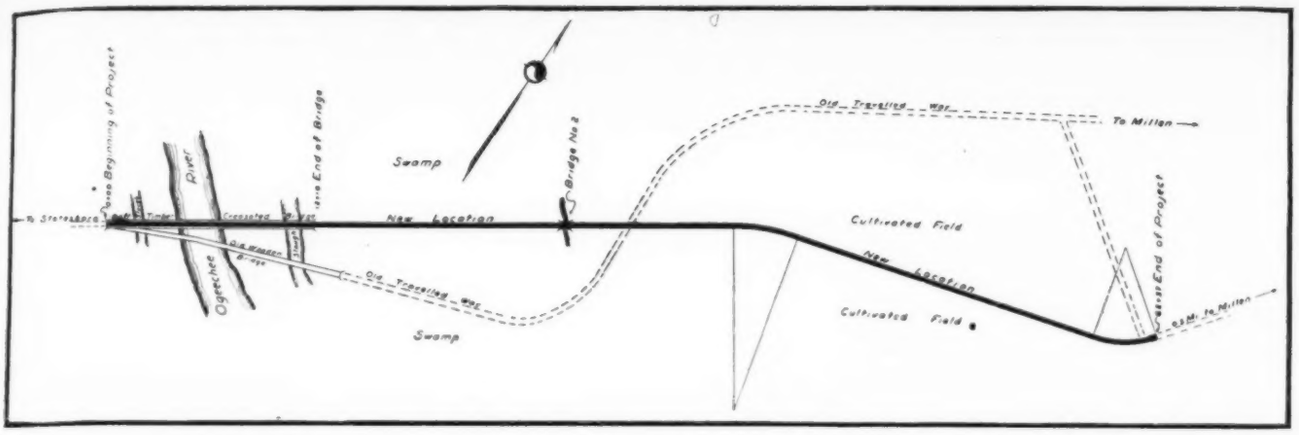


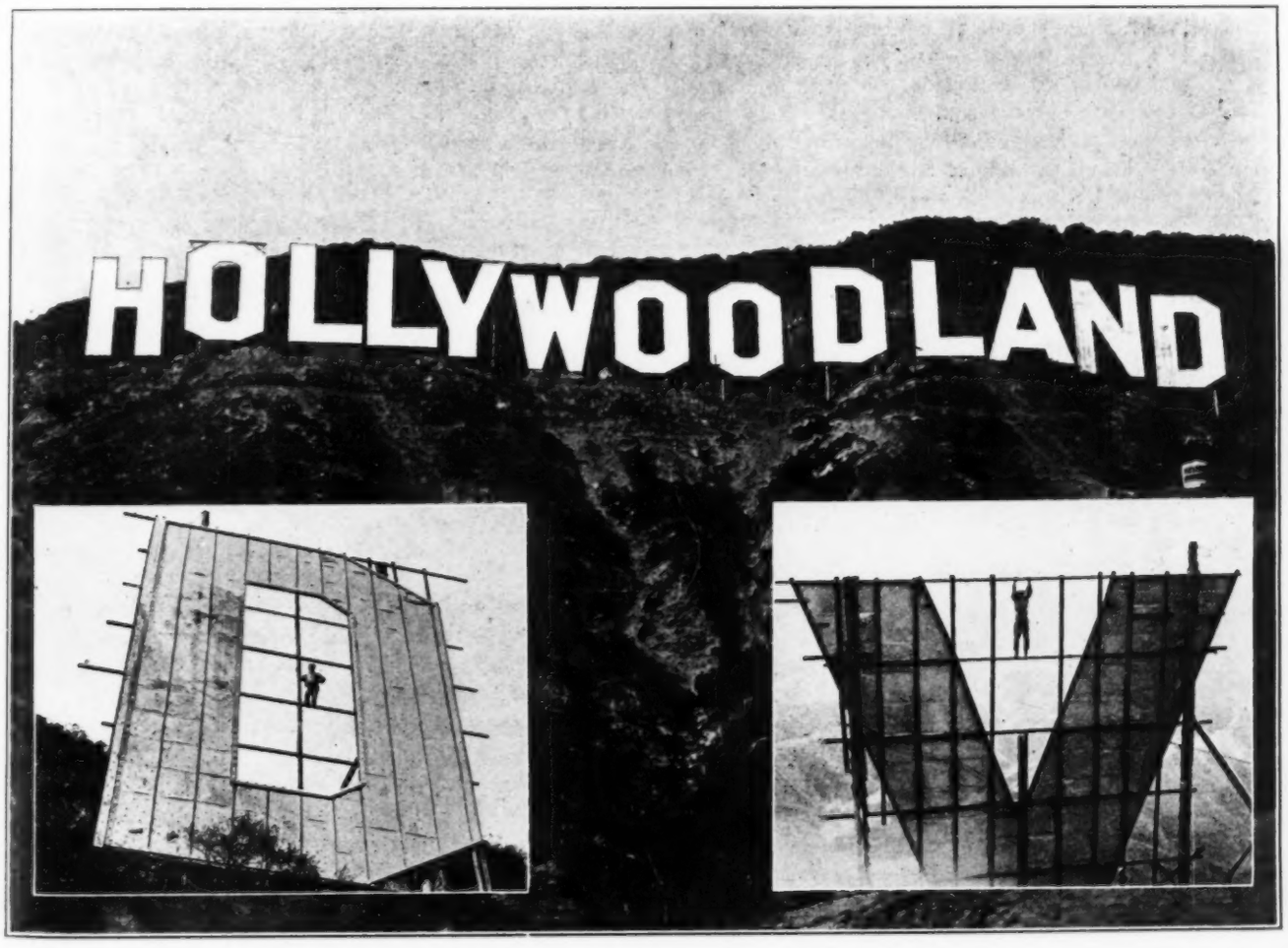
DIAGRAM SHOWING LOCATION OF OLD AND NEW ROADS AT OGEECHEE RIVER CROSSING

rains. The surfacing consists of 12 in. of sand clay or top soil, which was placed on the finished subgrade. On the project there are 288 reinforced concrete guard posts, spaced at intervals of 10 ft.

The two bridges are of the trestle type and are built of cresoted timber, each being designed to support the weight of a typical 10-ton truck. The main bridge, shown at the left of the diagram, is 1210 ft. in length, consisting of 68 15-ft. spans and 10 19-ft. spans on 4 pile bents. The timber used was 85 per cent heart pine, and before any of it was used it was thoroughly inspected and creosoted. Both bridges have been floored with a bituminous surfacing and it is expected that they will be in use 50 years from now.

The entire cost of the project was $31,300, of which approximately $18,200 was spent for the construction of the two bridges. Both of the photographs show the main bridge.

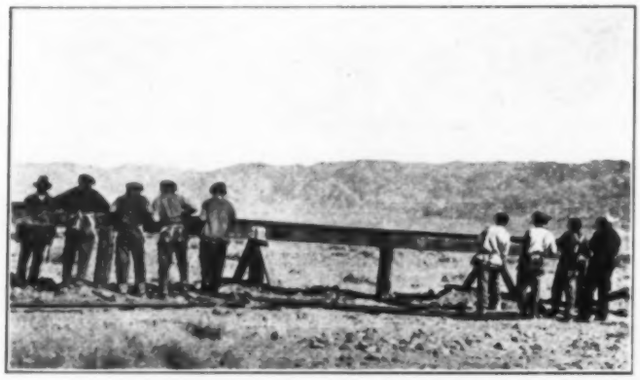
SIGN BUILDING ON A BIG SCALE



MONORAIL SYSTEM FOR DESERT HAULAGE

Inexpensive Type of Construction Used in Southern California

IN order to carry magnesium sulphate through some rather rough desert country in southern California a monorail system has been put in operation. This rather unusual type was chosen because of the nature of the country. It was possible to carry the monorail around curves which would have necessitated grading for a two-rail track, and, in addition, the territory which the road traverses is subject to cloudbursts, which would be apt to wash away ordinary tracks.



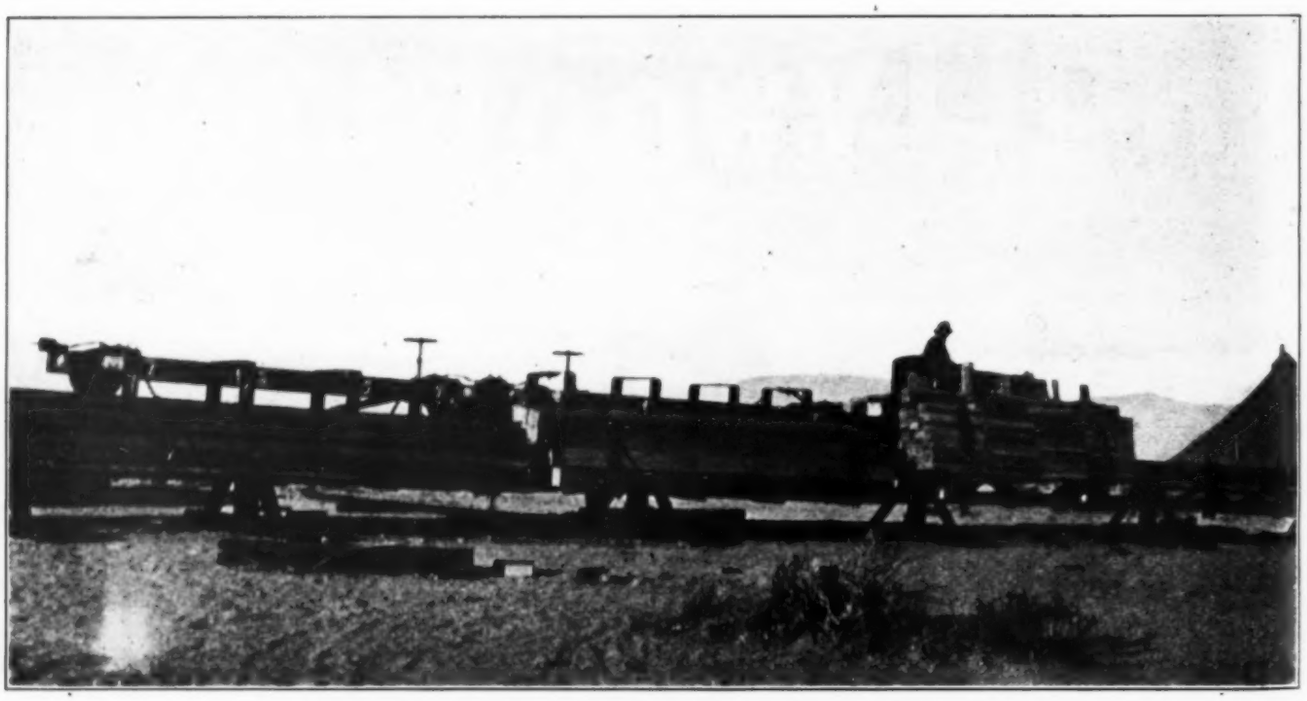
PUTTING UP THE MAIN RAIL

Nearly 20 miles of this monorail system are now in operation and 8 miles are still to be built. Standard ties are used, placed on 8-ft. centers, each bent consisting of a single plumb post placed in the center of the tie and braced on each side. On the plumb post is a stringer supporting a 50-lb. rail. Two timber side rails serve as guides, their faces making contact with rollers on either side of the cars.

The engine and cars are designed much like a pack saddle and are suspended on two wheels from the single rail. The top of the rail is 34 in. above the average level of the ground and the cars clear the ground on the sides by about 6 in. The engines are equipped with motors taken from tractors and carry a load of approximately 3 tons with 5 tons on a trailer.

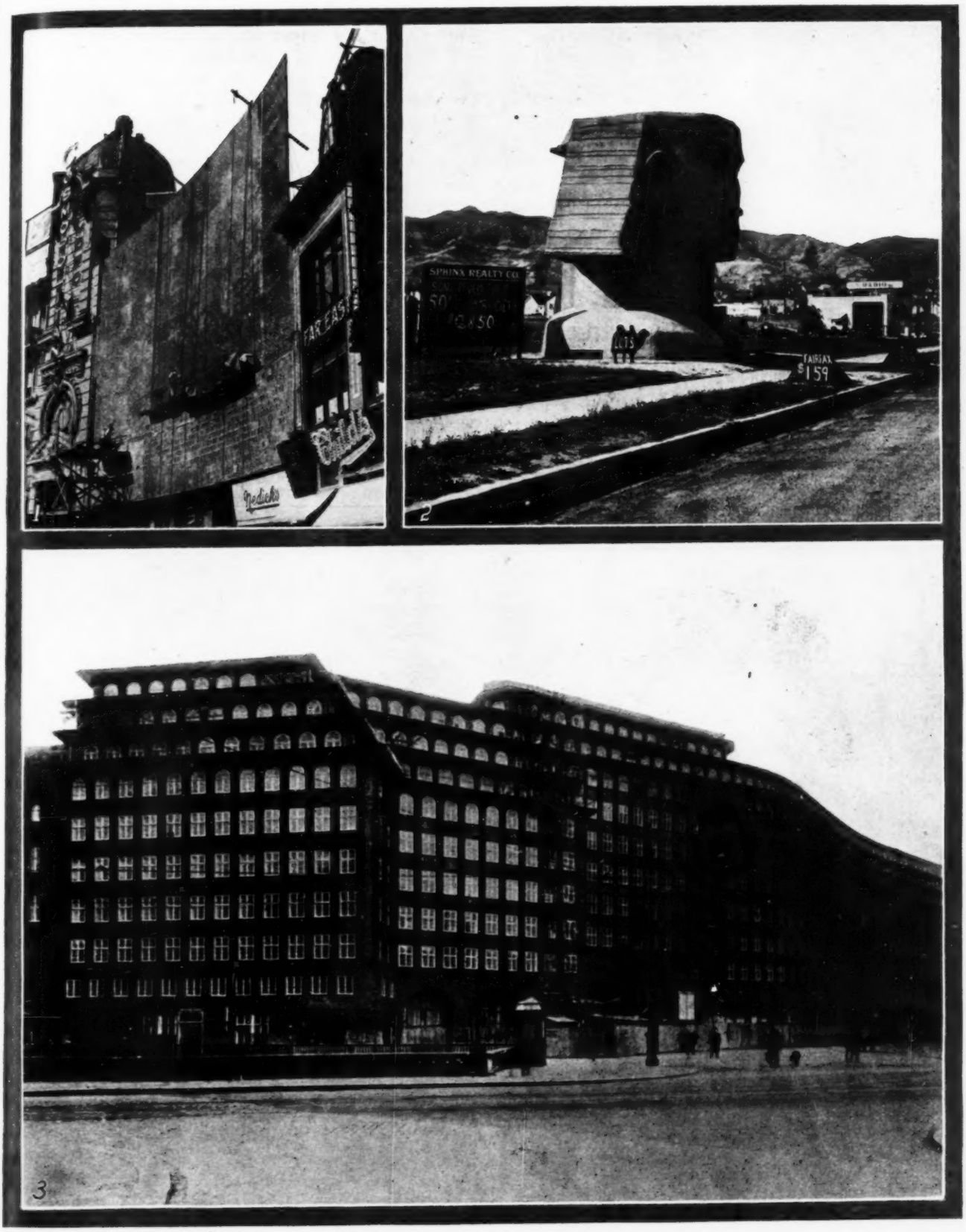
The large photograph at the bottom of this page shows the railroad in operation with one of the trains carrying lumber for future construction. The two small photographs show the road under construction. A gang of 30 men built 4 miles of this road in a month and during that month spent a goodly part of their time on shovel work, owing to the rocky washes that were encountered. This type of monorail road costs from $5,000 to $7,000 a mile.

FINISHING UP THE GUIDE RAILS



TRAIN LOADED WITH LUMBER UNDER WAY ON MONORAIL

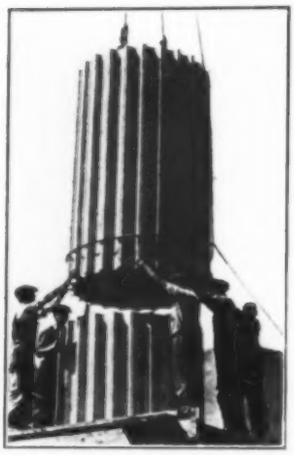
A Trio of Attention Getters



1. **Blocking out all the window space above the first floor of a building in order to make more room for advertising purposes. This brick billboard was carried well above the roof of the building.** © *Galloway.*
2. **A real estate office in Los Angeles. Designed to make the passerby stop and look whether he wants to or not.** © *International.*
3. **Germany's biggest office building. This structure, which is in Hamburg, has a frontage of 2000 ft. and takes up a goodly portion of the sky line.** © *International.*

NEW YORK'S NEW COURT HOUSE

Big Steel and Granite Structure Complete Except for Interior Work

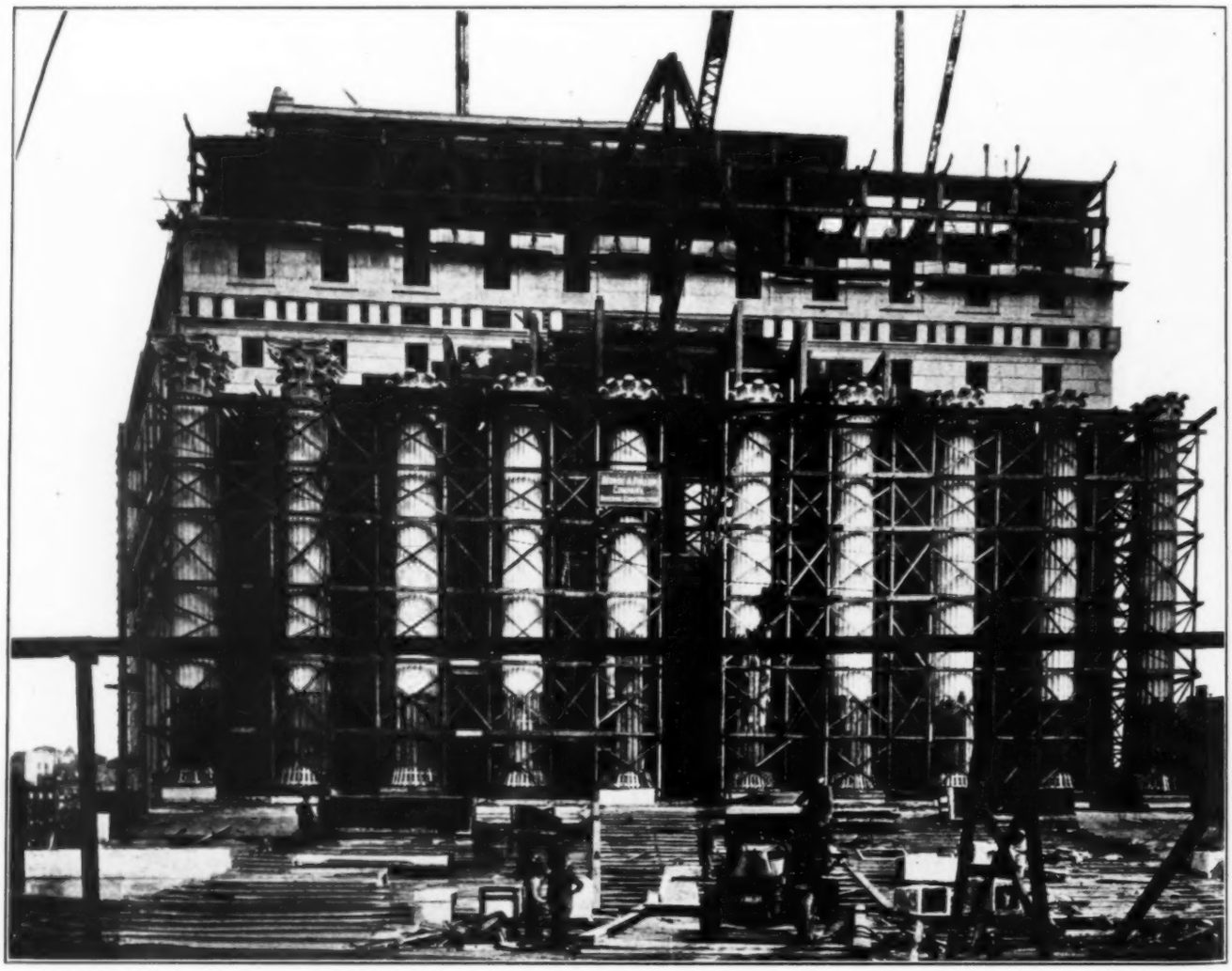


IN last month's issue of SUCCESSFUL METHODS the production of the stone for the New York County Court House was described. This rather unusual building is now ready to be turned over to the contractors for the interior, which will be handled as a separate job.

As may be seen from the photographs, the court house is hexagonal in sharpe. Its total perimeter is 900 ft. and each side of the hexagon is 152 ft. in length. The cube of the building is 8,820,000 cu. ft. and the total 554,000 sq. ft. It is 150 ft. in height above the street level. The foundations were completed under separate contract by Rogers & Haggerty, and, as stated in last month's issue, the Geo. A. Fuller Company of New York, obtained the contract for the actual construction of the building.

Two main problems presented themselves in connection with this work. The first was the necessity for prompt delivery of the 8000 tons of steel needed at a time when the mills were overcrowded because of the coal and shopmen's strikes on the railroads. This phase of the situation was handled by the aid of the New York Shipbuilding Corporation, which put its fleet of private cars in operation between Pittsburgh and Camden, where the Shipbuilding corporation set up a fabrication shop. This plan insured a continuous delivery of steel and there were no appreciable tie-ups during the progress of the job.

The granite, amounting in quantity to 205,000 cu. ft., was brought down from Stonington, Maine, in barges in average loads of 12,000 cu. ft. and then was stored on the job, a traveling crane being erected in the storage yard to take care of it. In addition, a complete carving plant was erected on the job and an average of 35 men were employed daily in this part of the work. They completed the carving of the col-



PUTTING THE CAPITALS ON THE ROW OF BIG COLUMNS THAT FORM THE FRONT OF THE COURT HOUSE

umns, the pilaster caps, mountings and panel courses in 15 months from the date of starting.

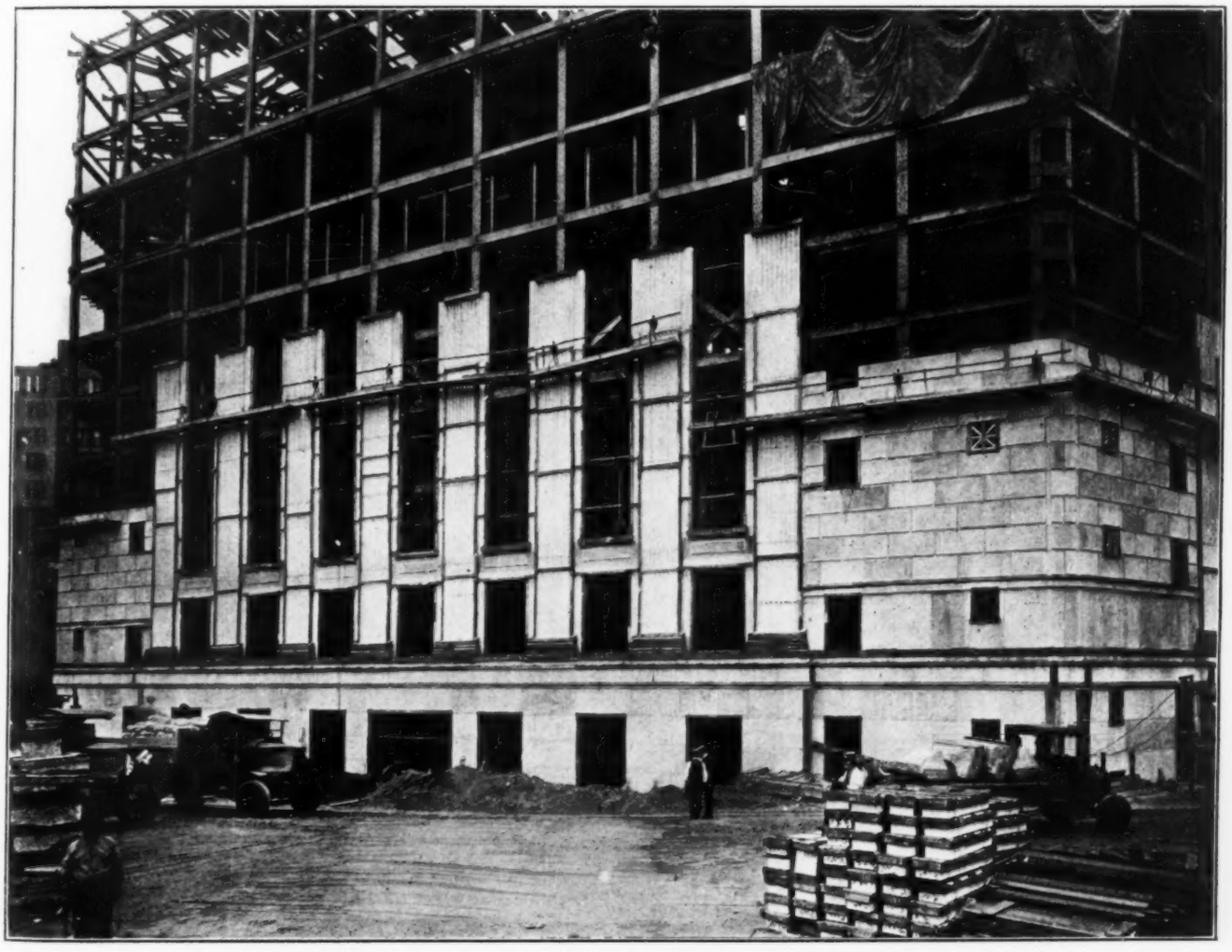
After considering various methods for transferring the stone from the storage yard to the sides of the building, it was decided that the most economical way would be to use ordinary motor trucks. These trucks were loaded in the yard and then made the short run to whichever side of the building the stone was marked for.

For the erection of the steel and stone, six derricks were used, set in each corner of the hexagon, and in addition a special stiff-leg derrick was erected on the portico to handle the big 30-ton stones which were used in that portion of the building. Six setting crews took care of the entire job of setting the stone and finished it 275 days from the date of starting.

CARVING PANELS ON SITE OF JOB

For the concrete work necessary, three hoisting towers and hoppers were used, the concrete being handled from the hoppers to the forms in buggies.

The magnitude of the job is well illustrated by the quantities of materials used in the work. The amount of steel and stone in the building already has been mentioned, and in addition there were more than 1,200,000 face brick used in the construction of the seven interior light courts; 5,000,000 common brick used for backing both the face brick and the granite; floor arches of cinder concrete 554,000 sq. ft. in area; 150,000 lb. of



TRANSPORTING STONE IN MOTOR TRUCKS FROM STORAGE YARD TO BUILDING

copper in the roofing and flashing; 35 tons of waterproofing asphalt; 48 tons of gravel used on the pitch and gravel roofs.

New York has its share of labor troubles, and during the progress of the work five strikes occurred. In spite of them the job was so well organized that they caused only slight delay.

Although the contract was awarded in June, 1922, actual construction did not begin until September of that year, so that the completion of so large a building in a little over 18 months is a considerable achievement. The superintendent in charge of the work for George A. Fuller Company is T. J. Wiggins and N. W. Barrett is the assistant superintendent.

The architect is Guy Lowell and the building has been put up under the direction of a commission headed by Comptroller Charles L. Craig. The building faces on Centre Street just north of City Hall.

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THE NEW COURT HOUSE AS IT NOW LOOKS

MACHINE VERSUS SHOVELERS

SHOVELERS LOADING SAND

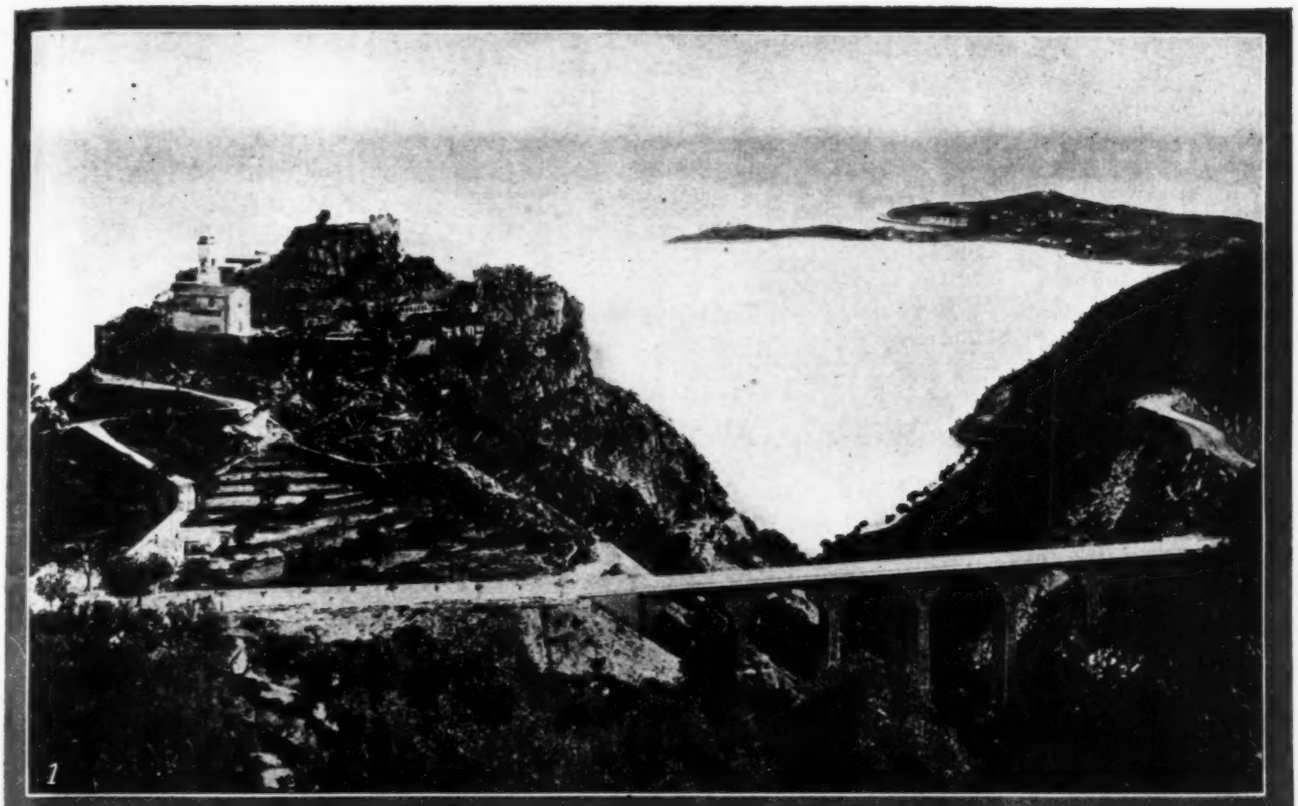
THE difference between hand and machine labor could hardly be more strikingly illustrated than by the two photographs on this page. They were taken on a road job done by the Milwaukee General Construction Company for Milwaukee County, Wis.

The upper photograph shows how the sand was loaded by hand labor and the lower photograph shows how a bucket loader was used to handle the stone. Each of these trucks was loaded with sand and gravel in 3½ min., and less than a minute of this time was required to load the stone, which, of course, is much the heavier material. Five shovelers are at work in the photograph showing the loading of the sand, and in the case of the stone only one man was needed to operate the bucket loader. The contractors estimate that 21 men would be required to load the stone at the same rate that the bucket loader and one man did it.

The storage plant shown in the photographs was constructed in a rather unusual manner. The material was delivered by electric railroad and a plank sheeting was built over the side of the railroad embankment. The material was dumped from side dump cars and flowed down the side of the embankment to a wooden platform at the bottom. This platform was wide enough to accommodate both the trucks and the bucket loader and was extremely useful to keep them from bogging down in wet weather. The sand did not flow readily and a scraper had to be used.

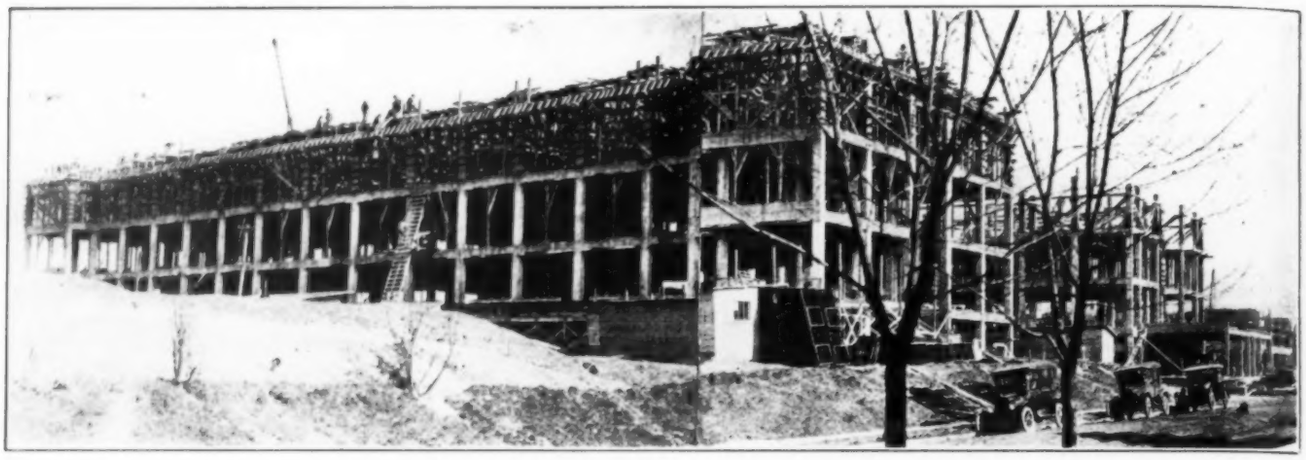
MACHINE LOADING STONE

How They Build In France



1. **The famous Corniche road at Nice. It winds up the hillside, is carried over a gorge on the viaduct in the foreground. It overlooks the Mediterranean Sea.** © *P. & A. Photos.*
2. **The scene of the Olympic Games. The Colombes Stadium near Paris, which is nearing completion.** © *International.*

DAYTON'S NEW HIGH SCHOOL

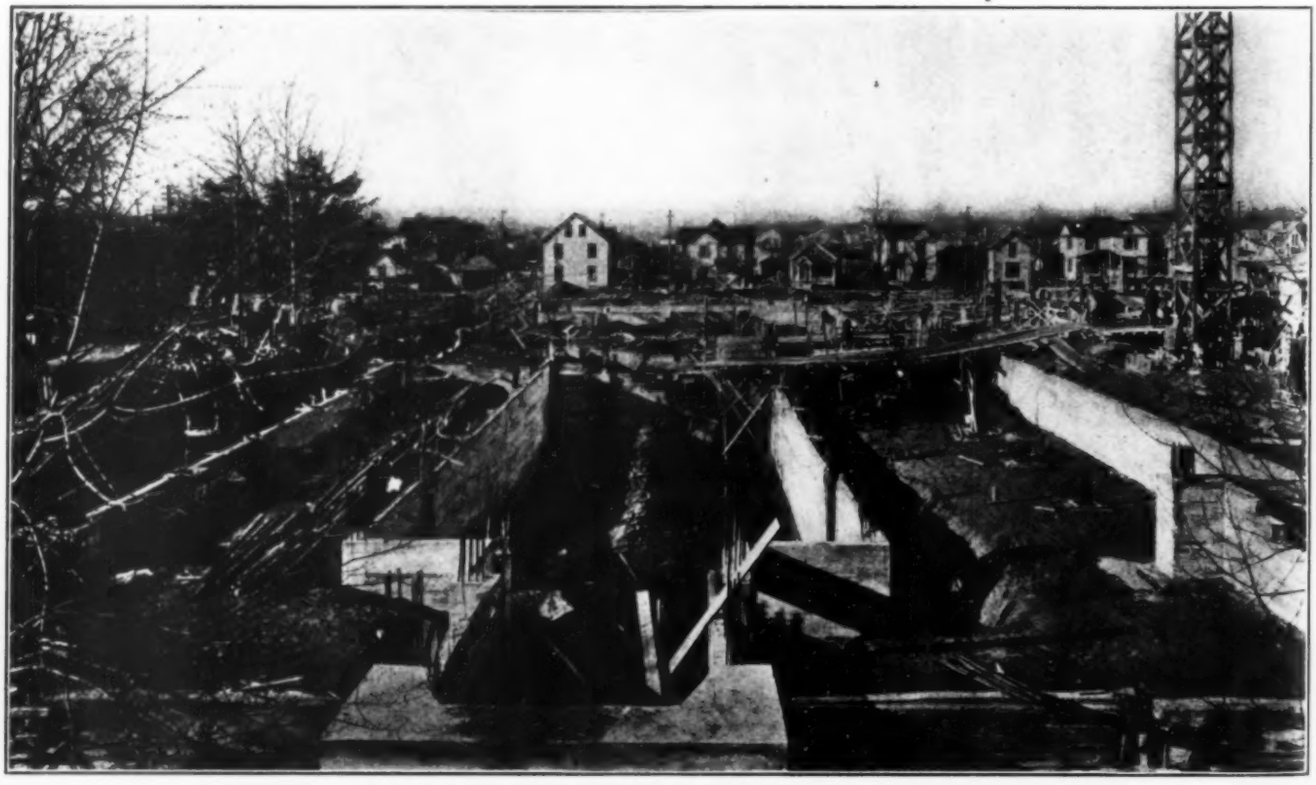


Contractors Carry on Work on $1,500,000 Structure During Winter Months

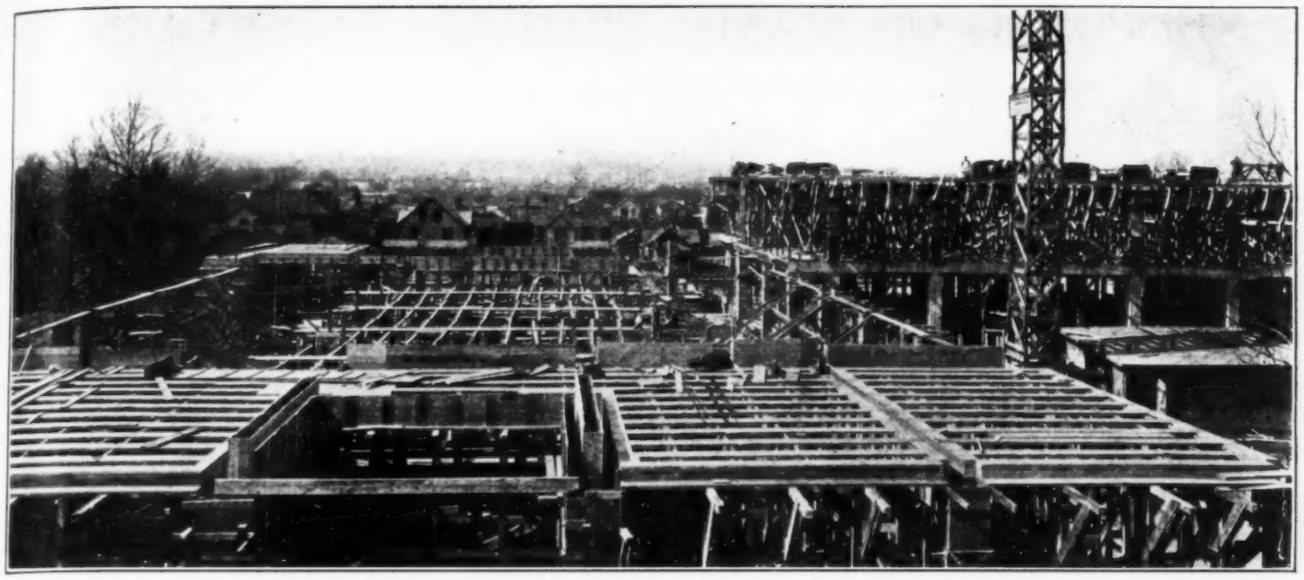
By Ivan E. Houk

IN building the new Roosevelt High School in Dayton, Ohio—a $1,500,000 structure built to provide a junior and senior high school for 2000 pupils—the Walbridge-Aldinger Company, contractors, carried on the construction work during the winter months as well as during the summer, taking proper precautions to prevent damage from low temperatures whenever such precautions were necessary.

The building is of the reinforced concrete type, faced with brick and trimmed with Bedford limestone. It is about 260 ft. wide and 500 ft. long, and covers two full city blocks. Before the building operations could begin it was necessary for the city government to legally vacate a street one block long, located through the center of the new building, and to remove and rebuild the sewer and water mains. The school is one of the most modern and completely equipped in the Middle West, containing, as it does, two gymnasiums, two swimming pools, an auditorium with 1700 seats, three dining rooms, kitchens, dental



BUILDING THE FOUNDATIONS WHICH PROVIDE ROOM FOR TWO SWIMMING POOLS



STEEL AND CONCRETE WORK ON ROOSEVELT HIGH SCHOOL

and medical clinics, conservatory, library, machine shops, foundry, and many other unusual features.

The excavations for the foundations, basement and swimming pools were made with a steam shovel, the dirt being hauled to a nearby dump in 1½-yd. dump wagons. The concrete was mixed along the east side, or front, of the building, hoisted in buckets by means of hoisting towers, and dumped into a hopper, from which it was carted to place in buggies. Built up sections were used for forms, so that they could be easily removed and used over again. Columns were reinforced with steel spirals and deformed bars, in the usual manner. Covering as much area as it did, practically all the different building operations could be carried on simultaneously, with comparatively little interference.

Schenck & Williams, local architects, made the plans and supervised the construction.

REBUILDING A MEXICAN THEATER

ONE of the oldest theaters in Mexico City has recently been transformed into a modern opera house. The old Theater Hidalgo became obsolete and it was decided to rebuild it inside and out. A reinforced concrete structure was decided upon, Louis Garcia being the architect. The contract was let to Joaquin Segura, who is both an engineer and a contractor.

The accompanying photograph shows the work while the reconstruction of the front of the building was in progress. The finished structure presents a very pleasing appearance and the auditorium has been arranged to accommodate a large audience. In addition to the main floor of the house, there are five galleries, the lowest gallery, which is only a couple of feet above the main floor, being devoted to boxes.

The new theater has been so equipped that moving pictures can be shown there.

The entire job of reconstructing the Theater Hidalgo was completed in a little more than six months. This photograph was sent to SUCCESSFUL METHODS by Mr. Segura, who has been a reader of this magazine for several years. He feels that his fellow contractors in the United States will be interested in the character of the work which he is doing in Mexico. He also is engaged in other construction projects.

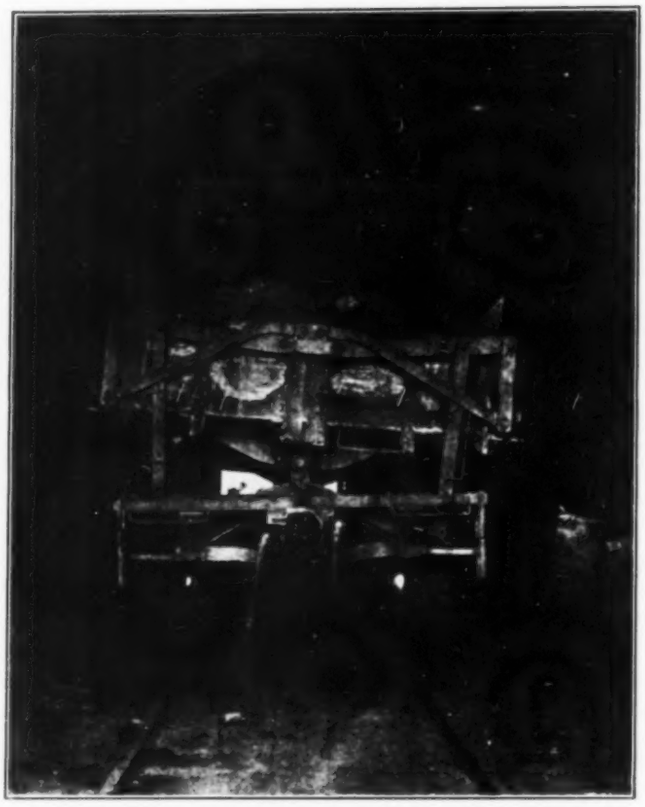
DISPOSING OF WASTE WITH AIR DUMP CARS

Power Company Uses Heavy Equipment for Removal of 100 Tons of Ashes Daily

By C. P. Burton

THE economical disposal of waste is one of the things which always needs attention in any great industrial development. The photographs on this page show how the Adirondack Power & Light Company gets rid of the ashes at its plant near Amsterdam, N. Y. This is an anthracite burning plant, and between 500 and 600 tons of coal are consumed each day. As 18 per cent of this fuel is ash, it brings the daily amount of waste which must be disposed of up to 100 tons.

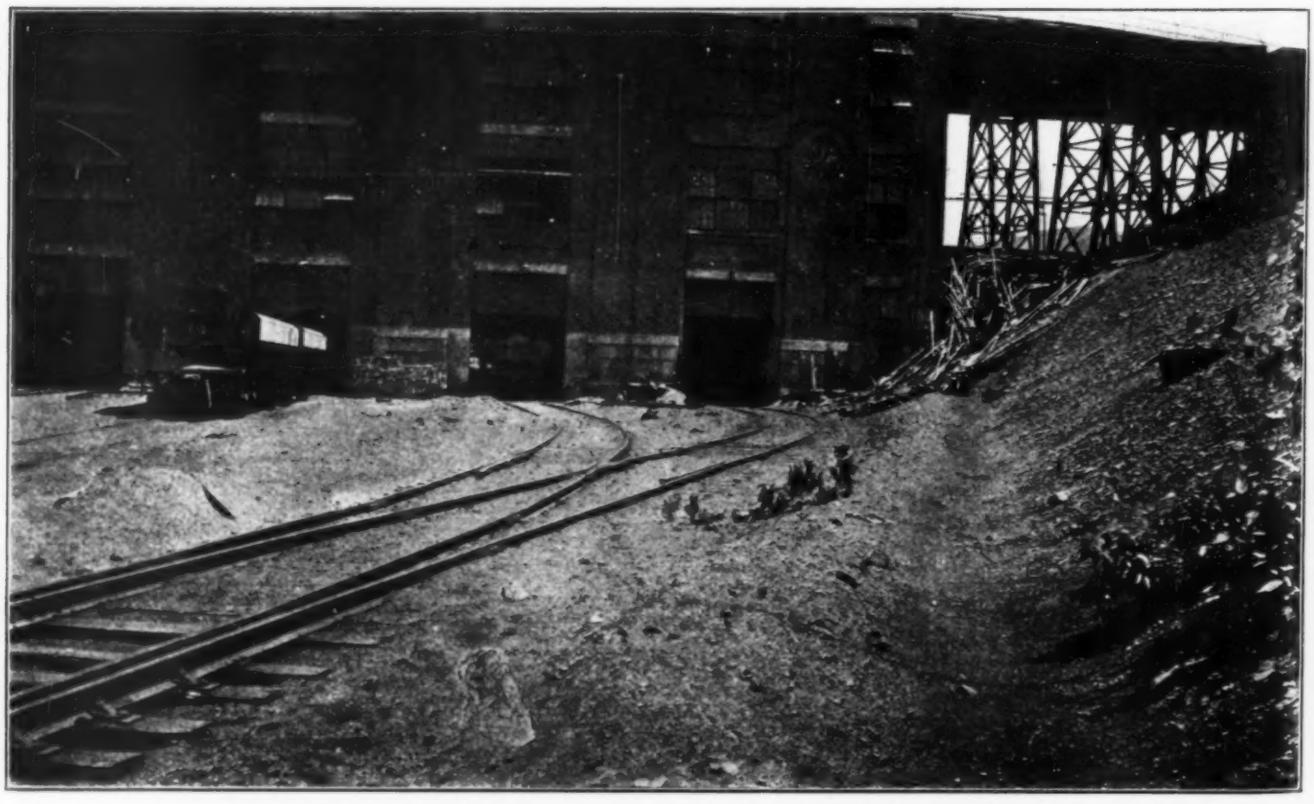
The method adopted for getting rid of these ashes was the installation of large air dump cars of 45-cu.-yd. capacity. They run on standard gage track and are taken through tunnels to ash hoppers directly underneath the boilers.



CAR RECEIVING ASHES FROM HOPPER UNDER BOILER

The cars are then taken out through the yards and dumped in places where new land is being built for industrial purposes. It is expected later that these ashes will be hauled to abandoned sections of the old Erie Canal.

For many years contractors have been aware of the advantages of air dump cars, but it is only comparatively recently that big industrial companies have fallen in line. The cars described in this article are exactly like those which are used on big construction jobs where considerable quantities of materials have to be handled.



AIR DUMP CARS ARE RUN UNDER POWER HOUSE TO RECEIVE ASHES

REMOVING STUMPS AT THIRTY CENTS APIECE

Clearing Right of Way on Road Job in Mississippi Simplified by Use of Explosives

THE ease with which a pine stump was removed from the right-of-way on a highway job in Harrison County, Miss., is illustrated by the three photographs on this page. This particular stump had been cut for twenty years and the sap wood had rotted off, but nevertheless the stump, which measured 32 in. in diameter, was still solid and resinous. Dynamite was used to remove it.

DRILLING THE STUMP

The first operation consisted in boring a hole 32 in. deep with a boring machine attachment on a tractor. It took only 1 min. to do this part of the job. The hole was then loaded with 2¼ lb. of 40 per cent ammonia dynamite, packed well into the bottom, primed with blasting cap and fuse, and tamped solidly to the mouth with earth. The fuse was then lighted and the result of the explosion destroyed both the large

SMASHED TO BITS

THE DYNAMITE AT WORK

stump and the small one standing about 18 in. from it.

They were blown completely out of the ground and into small pieces, as shown in the small picture in the right-hand column. Grubbing and axe work were unnecessary in connection with this job, and Paul Evans, Road Supervisor for District No. 20 of Harrison County, estimates the cost of removing the average stump by this method to be about 30 cents.

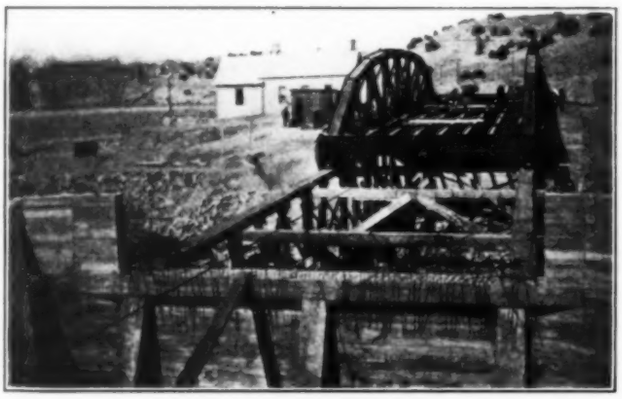
The use of explosives in highway construction is steadily increasing, and this particular job shows how dynamite can be utilized economically even when the objects to be removed are comparatively small.

PULLING A BRIDGE INTO PLACE

Structure Built on Bank to Prevent Destruction by Floods Before Completion

AFTER building the false work for a bridge near Pueblo, Colo., in the bed of the stream twice, and seeing it swept away by cloudbursts, H. M. Fox decided that it was time to adopt some other plan.

He therefore decided to assemble the steel work of the bridge on dry land and did not put up the false work until a day or two before he was ready to pull the bridge into place. The entire steel span was constructed in the roadway on one bank of the stream and when it was completed a large tractor was stationed on the opposite bank and with a steel cable pulled the bridge across the false work until it was in place on the concrete abutments.



PULLING STEEL BRIDGE INTO PLACE. THE CABLE MAY BE SEEN IN LOWER LEFT HAND CORNER

The whole job was completed in quick time and the wooden supports were removed before another flood had a chance to sweep them away.

This operation is another good illustration of the resourcefulness of the average contractor. When he is confronted by unusual conditions it is up to him to devise some way to get the job done on time despite the handicaps.

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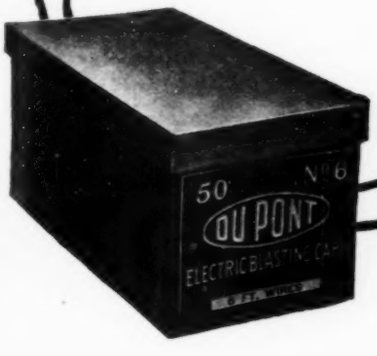

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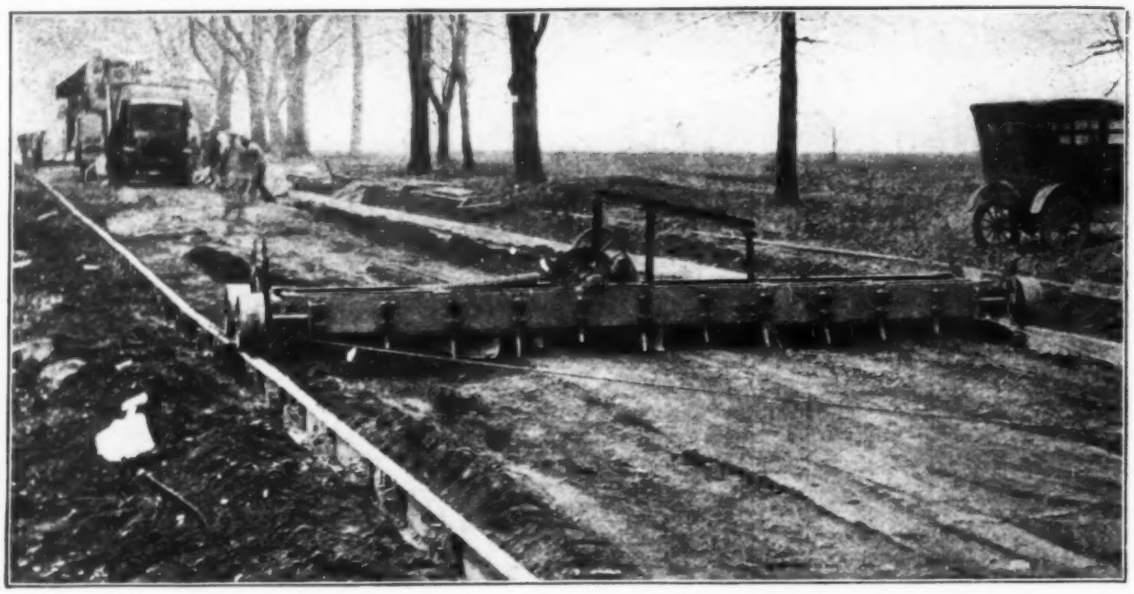

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